

Arkadi Vigalok

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Employment

2007 – *present*, **Associate Professor**
Tel Aviv University, School of Chemistry
Research Interests: Calixarene Chemistry; Fluorine Chemistry; Organometallic Chemistry; Green Chemistry,
2002 – 2007, **Senior Lecturer** (tenure track)
Tel Aviv University, School of Chemistry
1999 – 2002, **Postdoctoral Associate**
Massachusetts Institute of Technology, Department of Chemistry
Advisor: Prof. Timothy M. Swager
1992 – 1993, **Junior Research Fellow**
Kazan State University, Department of Chemistry

Education

1994 – 1999, **Ph.D. degree in chemistry**
Weizmann Institute of Science, Department of Organic Chemistry, Rehovot, Israel
Advisor: Prof. David Milstein
1987 – 1992, **M.Sc. degree in chemistry** (*summa cum laude*)
Kazan State University, Department of Chemistry, Kazan, Russia
Specialization in organic chemistry

Awards and Fellowships

1990-1991, Fellowship of the Mendeleev National Russian Chemical Society
1994-1997, Fellowship of the Ministry of Science and the Arts, Israel
1997, Fellowship of Distinction, The Weizmann Institute of Science
1998, Katzir Foundation Travel Fellowship
1998, Israel Chemical Society Distinction Award for a PhD Student
1999, Kennedy Distinction Prize, The Weizmann Institute of Science
1999-2000, Fulbright Foundation Postdoctoral Award
2000, Schmidt Prize for the Outstanding PhD Thesis in Chemistry in Israel
2002-2005, Yigal Alon New Faculty Award
2003, Raymond and Beverly Sackler Career Development Chair
2010, Israel Chemical Society Excellent Young Scientist Prize

Membership in Professional Societies

American Chemical Society
Israel Chemical Society

Languages

English, Hebrew, Russian

List of Publications of Arkadi Vigalok

1. Vigalok, A.; Ben-David, Y.; Milstein, D. Complexation of N₂, H₂, CO₂, and Ethylene to a T-Shaped Rhodium(I) Core, *Organometallics* **1996**, *15*, 1838-1844.
2. Vigalok, A.; Shimon, L. J. W.; Milstein, D. A Unique Dioxo Alkene Hydride Metal Complex: [RhH(O₂){CH₂=C(CH₂CH₂PBu^t)₂}], *J. Chem. Soc. Chem. Commun.* **1996**, 1673-1674.
3. Rybtchinski, B.; Vigalok, A.; Ben-David, Y.; Milstein, D. A Room Temperature Direct Metal Insertion into a Non-Strained Carbon-Carbon Bond in Solution. C-C vs. C-H Bond Activation, *J. Am. Chem. Soc.* **1996**, *118*, 12406-12415.
4. Vigalok, A.; Kraatz, H.-B.; Konstantinovskiy, L.; Milstein, D. Evidence for Direct Trans-Insertion in a Hydrido Olefin Rhodium Complex. Free Nitrogen as a Trap in a Migratory Insertion Process, *Chem. Eur. J.* **1997**, *3*, 253-260.
5. Van der Boom, M. E.; Liou, S.-Y.; Ben-David, Y.; Vigalok, A.; Milstein, D. Selective Activation of Alkyl- and Aryl-Oxygen Single Bonds in Solution with Transition Metal Complexes, *Angew. Chem., Int. Ed. Engl.* **1997**, *36*, 625-626.
6. Vigalok, A. and Milstein, D. Metal Stabilized Quinone- and Thioquinone Methides, *J. Am. Chem. Soc.* **1997**, *119*, 7873-7874.
7. Gandelman, M.; Vigalok, A.; Shimon, L. J. W.; Milstein, D. A PCN Ligand System. Exclusive C-C Activation with Rh(I) and C-H Activation with Pt(II), *Organometallics* **1997**, *16*, 3981-3986.
8. Vigalok, A.; Shimon, L. J. W.; Milstein, D. Methylene Arenium Cations via Quinone Methides and Xylylenes Stabilized by Metal Complexation, *J. Am. Chem. Soc.* **1998**, *120*, 477-483.
9. Rabin, O.; Vigalok, A. Milstein, D. Metal-Mediated Generation, Stabilization and Controlled Release of a Biologically Relevant Simple para-Quinone Methide — BHT-QM, *J. Am. Chem. Soc.* **1998**, *120*, 7119-7920. (*Highlights in Chemistry and Industry* **1998**, August 17, 656).
10. Vigalok, A.; Uzan, O.; Shimon, L. J. W.; Ben-David, Y.; Martin, J. M. L.; Milstein, D. Formation of η²-C-H Agostic Rhodium Arene Complexes and Their Relevance to Electrophilic Bond Activation, *J. Am. Chem. Soc.* **1998**, *120*, 12539-12544.
11. Vigalok, A.; Rybtchinski, B.; Shimon, L. J. W.; Ben-David, Y.; Milstein, D. Metal-Stabilized Methylene- and σ-Arenium Compounds: Synthesis, Structure, Reactivity, Charge Distribution and Interconversion, *Organometallics* **1999**, *19*, 895-905.
12. Rabin, O.; Vigalok, A. Milstein, D. A Novel Approach Towards Intermolecular Stabilization of para-Quinone Methides. First Complexation of the Elusive, Simplest Quinone Methide, 4-Methylene-2,5-Cyclohexadien-1-one, *Chem. Eur. J.* **2000**, *6*, 454-462.

13. Rytchinski, B.; Konstantinovskiy, L.; Shimon, L. J. W.; Ben-David, Y.; Vigalok, A.; Milstein, D. Solvent Stabilized 12e Rh(III) Alkyl Hydride Complexes. Unusual Selectivity in Reversible C-H Bond Elimination, *Chem. Eur. J.* **2000**, *6*, 3287-3292.
14. Vigalok, A. and Milstein, D. Direct Synthesis of Thermally Stable PCP-type Rhodium Carbenes, *Organometallics* **2000**, *19*, 2061-2064.
15. Vigalok, A. and Milstein, D. Methyl-to-Double Bond Migration in Methylene Arenium Rhodium Complexes, *Organometallics* **2000**, *19*, 2341-2345.
16. Ashkenazi, N.; Vigalok, A.; Parthiban, S.; Ben-David, Y.; Shimon, L. J. W.; Martin, J. M. L.; Milstein, D. Discovery of the First Metallaquinone, *J. Am. Chem. Soc.* **2000**, *122*, 8797-8798. (*Highlights in Chemical & Engineering News* **2000**, September 18, 47).
17. Gandelman, M.; Vigalok, A.; Konstantinovskiy, L.; Milstein, D. The First Observation and Kinetic Evaluation of a Single Step Metal Insertion into a Carbon—Carbon Bond in Solution, *J. Am. Chem. Soc.* **2000**, *122*, 9848-9849. (*News and Views in Nature* **2000**, November 23, 415).
18. Rytchinski, B.; Oevers, S.; Montag, M.; Vigalok, A.; Rozenberg, H.; Martin, J. M. L.; Milstein, D. Comparison of Steric and Electronic Requirements for C-C and C-H Bond Activation. Chelating vs Non-chelating Case, *J. Am. Chem. Soc.* **2001**, *123*, 9064-9077.
19. Vigalok, A. and Milstein, D. Advances in Metal Chemistry of Quinonoid Compounds: New Types of Interactions between Metals and Aromatics, *Acc. Chem. Res.* **2001**, *34*, 798-807.
20. Vigalok, A.; Zhu, Z.; Swager, T. M. Conducting Polymers Incorporating Tungsten-Capped Calixarenes, *J. Am. Chem. Soc.* **2001**, *123*, 7917-7918.
21. Vigalok, A. and Swager, T. M. Conducting Polymers of Tungsten(VI)-Oxo Calixarene: Intercalation of Neutral Organic Guests, *Adv. Mater.* **2002**, *14*, 368-371.
22. Vigalok, A.; Rytchinski, B.; Gozin, Y.; Koblenz, T. S.; Ben-David, Y.; Rozenberg, H.; Milstein, D. A Metal-Stabilized Phenoxonium Cation, *J. Am. Chem. Soc.* **2003**, *125*, 15692-15693.
23. Yahav, A.; Goldberg, I.; Vigalok, A. Synthesis of the Elusive (R₃P)₂MF₂ (M= Pd, Pt) Complexes, *J. Am. Chem. Soc.* **2003**, *125*, 13634-13635.
24. Bukhaltsev, E.; Goldberg, I.; Vigalok, A. Substituent – Dependent Formation of Organotransition-Metal Bimetallic Calix[4]arene Inclusion Complexes, *Organometallics* **2004**, *23*, 4540-4543.
25. Yahav, A.; Goldberg, I.; Vigalok, A. Difluoro Complexes of Pt(II) and Pt(IV) with Monodentate Phosphine Ligands. An Exceptional Stability of d⁶ Octahedral Organometallic Fluorides, *Inorg. Chem.* **2005**, *44*, 1547-1153.
26. Bukhaltsev, E.; Frish, L.; Cohen, Y.; Vigalok, A. Single-Site Catalysis by Bimetallic Zinc Calixarene Inclusion Complexes, *Org. Letters* **2005**, *7*, 5123-5126.

27. Bukhaltsev, E.; Goldberg, I.; Vigalok, A. Cone vs an Alternate Structure in the Synthesis of Organometallic Calixarene Inclusion Complexes, *Organometallics* **2005**, *24*, 5732-5736.
28. Kotzen, N.; Goldberg, I.; Vigalok, A. Transition metal ion coordination to the neutral oxygen atoms of the calix[4]arene lower rim, *Inorg. Chem. Comm.* **2005**, *8*, 1028-1030. *Top 25 Hottest Articles* within the journal.
29. Yahav, A.; Goldberg, I.; Vigalok, A. Iodine Oxidative Addition to Isomeric Platinum(II) Phosphine Complexes, *Organometallics* **2005**, *24*, 5654-5459.
30. Kotzen, N.; Goldberg, I.; Lipstman, S.; Vigalok, A. Unexpected Pt(II) Migration Between the Calixarene Oxygen Atoms, *Inorg. Chem.* **2006**, *45*, 5266-5268.
31. Yahav-Levi, A.; Goldberg, I.; Vigalok, A. Aryl-Halide vs. Aryl-Aryl Reductive Elimination in Pt(IV) Phosphine Complexes, *J. Am. Chem. Soc.* **2006**, *128*, 8710-8711.
32. Bukhaltsev, E.; Goldberg, I.; Vigalok, A. Tunable π -Interactions in Monomeric Organozinc Complexes: Solution and Solid State Studies, *Organometallics* **2007**, *26*, 4015-4020.
33. Kaspi, A.; Yahav-Levi, A.; Goldberg, I.; Vigalok, A. Xenon Difluoride Induced Aryl-Iodide Reductive Elimination: a Simple Access to Difluoro Pd(II) Complexes, *Inorg. Chem.* **2008**, *47*, 5-8.
34. Yahav-Levi, A.; Goldberg, I.; Vigalok, A.; Vedernikov, A. N. Competitive Aryl-Iodide vs. Aryl-Aryl Reductive Elimination Reactions In Pt(IV) Complexes: Experimental and Theoretical Studies, *J. Am. Chem. Soc.* **2008**, *130*, 724-731.
35. Kotzen, N.; Vigalok, A. The Inside of Metal Calixarene Chemistry, *Journal of Supramolecular Chemistry* (special issue) **2008**, *20*, 129-139.
36. Shapiro, N.; Vigalok, A. Highly Efficient Organic Reactions “in Water”, “on Water” and Both, *Angew. Chem. Int. Ed.* **2008**, *47*, 2849-2852. Selected as a “Hot Paper” by the Editorial Board. Highlighted in Globes and Jerusalem Post (8.4.2008). Selected by faculty of 1000 Biology, <http://f1000biology.com/guardpages/evaluation/1108522/>.
37. Vigalok, A. Metal Mediated Formation of Carbon-Halogen Bonds, Invited Concept Article, *Chem. Eur. J.* **2008**, *14*, 5102 – 5108.
38. Kotzen, N.; Goldberg, I.; Vigalok, A. Stepwise Boron-to-Zinc C₆F₅ Group Transfer in a Zn-Calixarene System, *Organometallics* **2009**, *28*, 929–932.
39. Tzadka, E.; Goldberg, I.; Vigalok, A. Entry to New *N,O*-ligands from Oxygen-Depleted Calixarenes, *Chem. Commun.* **2009**, 2041-2043.
40. Elias, S.; Vigalok, A. Amphiphilic Block Polypeptide-Type Ligands for Micellar Catalysis in Water, *Adv. Syn. Catal.* **2009**, *351*, 1499-1504. Highlighted in *SYNFACTS*, October **2009**.

41. Shapiro, N.; Kramer, M.; Goldberg, I.; Vigalok, A. Straightforward Radical Organic Chemistry in Neat Conditions and “on Water”, *Green Chem.* **2010**, *12*, 582–584.
42. Yahav-Levi, A.; Goldberg, I.; Vigalok, A.; Vedernikov, A. N. Aryl-Bromide Reductive Elimination from an Isolated Pt(IV) Complex, *Chem. Commun.* **2010**, *46*, 3324–3326.
43. Yahav-Levi, A.; Goldberg, I.; Vigalok, A. Synthesis and Reactivity of Unsymmetrical Difluoro Pt(IV) Complexes, *J. Fluor. Chem.* (special issue) **2010**, *131*, 1100-1102.
44. Kaspi, A. W.; Vigalok, A. Late Transition Metal-Mediated Formation of Carbon-Halogen Bonds, Book chapter in *Topics in Organometallic Chemistry* (31), **2010**, 19-38. Springer: Formation of C-X Bonds.
45. Kaspi, A. W.; Goldberg, I.; Vigalok, A. Reagent-Dependent Formation of C-C and C-F Bonds in Pt complexes: an Unexpected Twist in the Electrophilic Fluorination Chemistry", *J. Am. Chem. Soc.* **2010**, *132*, 10626-10627.

Book:

Guest editor of special volume of *Topics in Organometallic Chemistry* (31), Formation of C-X Bonds, Springer: 2010. <http://www.springer.com/chemistry/organic+chemistry/book/978-3-642-12072-5>

Patent:

Vigalok, A.; Shapiro, N. Production of Carboxylic Acids and 1,2-Diols via Oxidation of Aldehydes and Alkenes, PCT Int. Appl. (2008), WO 2008149370, A2 20081211.

Lectures and Oral Presentations

October 2001, School of Chemistry, Tel Aviv University, Tel Aviv, Israel.
October 2001, Department of Organic Chemistry, The Weizmann Institute of Sciences, Rehovot, Israel.
October 2001, Institute of Chemistry, The Hebrew University, Jerusalem, Israel.
January 2002, Department of Chemistry, University of California, Los Angeles, CA, USA.
February 2002, Department of Chemistry, Indiana University, Bloomington, IN, USA.
April 2002, PMSE Section, American Chemical Society Meeting, Orlando, FL, USA.
April 2003, Department of Chemistry, The Technion- Israel Institute of Technology, Haifa, Israel.
February 2004, Organometallic Section, Israel Chemical Society Meeting, Tel Aviv, Israel.
December 2004, Department of Chemistry, The Technion- Israel Institute of Technology, Haifa, Israel.
January 2005, Institute of Chemistry, The Hebrew University, Jerusalem, Israel.
February 2005, Polymer Section, Israel Chemical Society Meeting, Tel Aviv, Israel.
August 2005, Inorganic Division, American Chemical Society Meeting, Washington, DC, USA.
September 2005, Department of Chemistry and Biochemistry, Free University of Berlin, Germany.
September 2005, Department of Chemistry, University of Cologne, Germany.
September 2005, Department of Chemistry, University of Bonn, Germany.
September 2005, Department of Chemistry, University of Aachen, Germany.
September 2005, Department of Chemistry, University of Heidelberg, Germany.
December 2005, Symposium: Inorganic Fluorine Chemistry: Bridging Fundamental and Applied Chemistry, Pacificchem 2005, Honolulu, HI, USA.
December 2005, Symposium: Multidentate and Macrocyclic Ligands in Coordination Chemistry: Control of Reactivity and Structure by Ligand Design, Pacificchem 2005, Honolulu, HI, USA.
May 2006, Department of Chemistry, Bar-Ilan University, Israel.
December 2006, Minerva Conference: Advances and Trends in Organic Chemistry, The Weizmann Institute of Science, Rehovot, Israel
May 2007, Sackler Symposium "Metals in Chemistry", Tel Aviv University, Tel Aviv Israel
June 2007, Faculty of Chemistry, The Technion- Israel Institute of Technology, Haifa, Israel
July 2007, Organometallic Gordon Research Conference, Newport, RI, USA
July 2007, Central R&D Experimental Station, DuPont Co., Wilmington, DE, USA
August 2007, International Symposium "Calix 2007", University of Maryland, College Park, MD, USA
December 2007, Department of Chemistry, Ben Gurion University, Beer-Sheva, Israel
February 2008, Israel Chemical Society Meeting, Jerusalem, Israel
July 2008, 38th International Conference on Coordination Chemistry, Jerusalem, Israel
September 2008, Bromine Industries, Beer-Sheva, Israel
November 2008, University of Zurich, Switzerland
November 2008, University of Konstanz, Germany
December 2008, University of Strasbourg, France
December 2008, Weizmann Institute of Science, Rehovot, Israel
November 2009, Israel Chemicals Ltd., Tel Aviv, Israel
March 2010, The Scripps Research Institute, La Jolla, CA, USA
March 2010, Special Symposium of the Fluorine Division, American Chemical Society Meeting, San Francisco, CA, USA
June 2010, Institute of Chemistry, The Hebrew University of Jerusalem, Israel
July 2010, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, USA
January 2011, 20th Winter Fluorine Conference, St. Pete Beach, FL, USA
February 2011, Israel Chemical Society Meeting, Tel Aviv, Israel